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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/705,447	11/03/2000	Miron Nicolae	2965/MIRON/US	7879
24964	7590	12/18/2003	EXAMINER	
GOODWIN PROCTER L.L.P 103 EISENHOWER PARKWAY ROSELAND, NJ 07068			LYONS, MICHAEL A	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/705,447	Applicant(s) NICOLAE, MIRON	
	Examiner Michael A. Lyons	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 42-133 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 42-133 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)                      5) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      6) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 10, 2003 has been entered.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 42-133 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daval et al (3,758,194) in view of Salgo (3,551,051) in further view of Rumbaugh et al (5,710,655).**

With regard to claim 42, Daval discloses (Fig. 1) a first plate 11 and a second plate 12. While the coefficient of reflection of these plates is similar, it is well known to change the coefficient of one substrate so its coefficient is higher than that of the first substrate. Daval also discloses an optical medium 10 between the substrates. Daval fails to disclose, however, a beam collimating element and an optical converging element, and the plates are semitransparent electrodes, not substrates as claimed.

As for the beam collimating element, Official Notice is taken as to the notoriously well known use of a fiber optic as a collimating element as disclosed in the application.

As for an optical converging element, Salgo shows (Fig. 4) a lens 160 outside the interferometer to collimate the output beams from the interferometer onto a focused point 162.

As for the substrate, Rumbaugh (Fig. 1a) discloses a cavity thickness compensated etalon filter where the two end plates 10 and 12 are substrates.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add an optical converging lens to the device of Daval as per Salgo to collimate the output beam from the interferometer to a focused point and as per Rumbaugh to provide substrates for the light beams to enter and exit the cavity.

With regard to claim 55, the first substrate, second substrate, beam collimating element, optical medium, and optical converging element are discussed above. In addition, Daval discloses (Fig. 1) a refractive index adjuster V to change the refractive index of the material between the substrates to the desired index. Daval's device fails to show an adjustable spacer, a displacement transducer, and a controller for monitoring the unable operation of the device.

As for the adjustable spacer, Salgo discloses (Fig. 4) a washer 165 that can have its size adjusted to adjust the spacing between the substrates.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add washers to the device of Daval as per Salgo to better facilitate the adjustment of the gap between the substrates of the interferometer.

Regarding the displacement transducer and the controller, these functions can be controlled by computer, and the inclusion of one to the device is well known in the art.

With regard to claim 65, the first substrate, second substrate, beam collimating element, optical medium, and optical converging element are disclosed above. Additionally, Rumbaugh

discloses that the substrates of the device are separated by “typically about 10  $\mu\text{m}$ ” (Col. 5 ,line 15-17). This distance is equal to a wavelength of light.

With regard to claim 78, the first substrate, second substrate, beam collimating element, optical medium, optical converting element, adjustable spacer, refractive index adjuster, displacement transducer, and controller and gap distance are discussed above.

With regard to claim 88, the first substrate, second substrate, beam collimating element, optical medium, and optical converging element are disclosed above. While the devices fail to disclose a second transmission optimized portion on the outer surface of the first substrate, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second transmission optimized portion to the device in order to facilitate better entry of light into the device, as the addition of such a port imparts no functional change to the properties of the etalon and its substrates.

With regard to claim 101, the first substrate, second substrate, beam collimating element, optical medium, optical converging element, adjustable spacer, refractive index adjuster, displacement transducer, and controller are disclosed above. While the devices fail to disclose a second transmission optimized portion on the outer surface of the first substrate, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second transmission optimized portion to the device in order to facilitate better entry of light into the device, as the addition of such a port imparts no functional change to the properties of the etalon and its substrates.

With regard to claim 111, the first substrate, second substrate, beam collimating element, optical medium, optical converging element, and substrate gap distance are disclosed above.

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While the devices fail to disclose a second transmission optimized portion on the outer surface of the first substrate, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second transmission optimized portion to the device in order to facilitate better entry of light into the device, as the addition of such a port imparts no functional change to the properties of the etalon and its substrates.

With regard to claim 124, the first substrate, second substrate, beam collimating element, optical medium, optical converging element, adjustable spacer, refractive index adjuster, displacement transducer, controller, and substrate gap distance are disclosed above. While the devices fail to disclose a second transmission optimized portion on the outer surface of the first substrate, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second transmission optimized portion to the device in order to facilitate better entry of light into the device, as the addition of such a port imparts no functional change to the properties of the etalon and its substrates.

As for claims 43, 56, 66, 79, 89, 102, 112, and 125, Daval discloses the use of an angled incident light beam 13 entering the etalon. A specific angle, however, is not disclosed. Setting the incidence angle of the incoming light to one degree would have been obvious to one of ordinary skill in the art at the time the invention was made, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

As for claims 44, 57, 67, 80, 90, 103, 113, and 126 Salgo discloses a light collimator 136.

As for claims 45, 68, 91, and 114 Salgo discloses a washer 165 used as an adjustable spacer.

As for claims 46, 69, 92, and 115 Daval discloses a refractive index adjuster V.

As for claims 47, 58, 70, 81, 93, 104, 116, and 127, Salgo discloses a voltage source 167.

As for claims 48, 59, 71, 82, 94, 105, 117, and 128, Daval discloses a voltage source V.

As for claims 49, 60, 72, 83, 95, 106, 118, and 129, Official Notice is taken as to the use of a piezoelectric control voltage device as a spacer, as the operation of a PZT would cause the element to expand and contract.

As for claims 50, 61, 73, 84, 96, 107, 119, and 130, Daval's voltage source is an electro-optical control voltage device.

As for claims 51, 74, 97, and 120, Official Notice is taken as to using a computer for the displacement transducer and the controller for monitoring, as such use is common practice.

As for claims 52, 62, 75, 85, 98, 108, 121, and 131 Official Notice is taken as to the well known process of adding lenses to a single lens to create a lens system; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add lenses to the lens of Salgo to make a lens system for optical convergence.

As for claims 53, 63, 76, 86, 109, 122, and 132 the output light beams from the device of Salgo are incident upon a single spot at element 162.

As for claims 54, 64, 77, 87, 110, 123, and 133 Official Notice is taken as to the well known use of an optical fiber for the input aperture of the collimated output light.

### ***Response to Arguments***

Applicant's arguments filed October 10, 2003 in conjunction with the request for continued examination have been fully considered but they are not persuasive. The applicant's arguments focus on two claims: that the prior art of record used in the rejection above fails to

meet the limitation “such that there is no interference of the reflected beams within the device” as emphasized by the applicant, and the lack of transmission-optimized optical ports on the substrates in the claimed device. With regards to the interference statement, the applicant claims that all of the prior art references have light interference within the etalon, since “known interferometers such as those in the cited references operate on the principle of interference within the cavity to obtain sharp resonances and therefore very narrow band filters”.

The examiner fails to see how the prior art etalons will generate interference within the cavity. First, by an examination of the figures, especially in Daval, the primary reference, the light beam 13 within the etalon is a narrow beam. As the light reflects off each substrate, there is no overlap between the beam initial to the substrate and the reflected beam, leading to no interference occurring within the etalon. The only way interference would occur within the etalon would be a result of the light beams overlapping. Also, the only way for this interference to be detected would be to have a detector at the second substrate; otherwise, no interference would be noticed. Furthermore, there is no mention, explicit or otherwise, of any actual interference occurring within the etalon; the interference is all detected outside of the etalon, after the light beams are collimated to a single point at a detector.

As to the lack of transmission-optimized optical ports, it is the position of the examiner that the lack of such ports on the prior art references does not hinder them from performing in the same manner as the claimed apparatus. Thus, the addition of such claimed ports, as discussed above, would only serve to facilitate entry or exit of light at the etalon in a more efficient manner; the device will operate as planned with or without the ports.



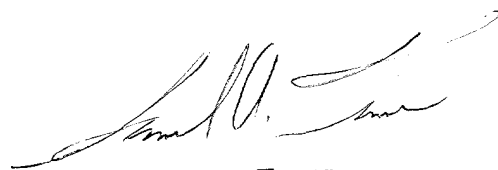
Finally, to reiterate from the arguments stemming from the first Office Action relating to the mention that certain elements are well known, the applicant desires evidence such features taken as being well known in the art. First, the substrate gap contained in original claim 13 has been addressed in the claim rejections above. The optical fiber usage in original claims 1, 12, 32, and 41 is covered in US Pat. 5,361,155 to Chiaroni et al as disclosed in the applicant's IDS. The use of a computer in the art is disclosed in Fig. 9, element 78 of the Rumbaugh device. US Pat. No. 5,359,760 to Busse et al discloses the use of PZT spacers. Finally, US Pat. No. 5,557,468 to Ip as disclosed in the applicant's IDS discloses a device with plates having reflective coefficients  $R_0$  and  $R_1$ , wherein  $R_0 > R_1$ , and  $R_0$  does not equal 100%.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Lyons whose telephone number is 703-305-1933. The examiner can normally be reached on Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G Font can be reached on 703-308-4877. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0935.

MAL  
December 10, 2003



**Samuel A. Turner**  
Primary Examiner